head 3a), 5a" (on component 5a), and 1g' and 1g" (on component 1g). The said chamfered surface 5a" with the coupling components connected together, gives rise to a ring-shaped and wedge-shaped chamber 27, into which small quantities of dirt, oil etc. which have not been wiped off can penetrate downwards so that they do not interfere with the engagement of the couplings.

Figure 4 illustrates the case where the lower surface 5a" is also straight. In this case the thickness of the supporting device is illustrated by 1a and the step between the surfaces 2a and 22b is denoted by b. The latter-mentioned distance is 0,1 - 2,0 mm.

The function of the coupling is known from prior art. The male portion 2 is introduced into the female portion, whereby the outer sleeve 5 is pushed in and the seal 19 seals against the inner sleeve when the valve 16 in the male portion 2 is opened by the coupling force. When the outer sleeve 5 is inserted to a certain extend this interacts with the inner sleeve and entrains the latter, whereby the sealing arrangement together with the seal 7 is opened. When the components are locked to each other the flow path 20 is thus completely open.

When the members are disengaged the springs 6 and 8 retract the sleeves 5 and 4 respectively. The seal 19 no longer interacts with the sleeve 4 after this has sealed against the valve head 3a, whereupon finally the outer sleeve 5, also the valve 16 in coupling member 2, revert to their outer position as shown in Figure 1.

Figures 5 and 6 show further embodiments of the coupling member of the present invention. At large medium pressure it can be advantageous to discharge the fixed valve body from forces of the sleeve 4', 4" so the latter one does not rest only on the valve head 3a', 3a" in the closed or sealed position. According to said embodiments the first coupling member is provided with a tube formed part fastened to the body of the first coupling member and separating the space of the spring for the outer sleeve 5', 5" from the space of the inner sleeve 4', 4". Said tube formed part is attached to the coupling body via threads 29 and 32, respectively. The embodiment of Figure 5 having a seal 30 as well för preventing leakage.

Said tube formed part carries the flow distribution housing 28, which according to Figure 5 can be attached by means of press fit or, according to Figure 6, by means of threads 34. The valve body can in a corresponding way be attached to the flow distribution housing by press fit as in Figure 5 or by threads 33 as in Figure 6.

In the lower parts, the tube formed part is provided with an inwardly directed flange which serves as disharging device for the sleeve 4', 4", which having a corresponding flange or shoulder positioned below the sealing device of the sleeve, which sealing device is of "back-up" type. The end positions of the sleeve are shown by full and dotted lines, respectively. Furthermore, the sleeve having on its upper end a shoulder allotted to its belonging spring.

Said discharging devices are adapted so that the sealing function between the sleeve 4', 4" and the valve head 3a', 3a" always is carried through safely before discharging occurs. The outer sleeve 5', 5" is in these embodiments provided with not shown axial slots at its upper parts. Said slots make it possible to push in said outer sleeve via the front surface of the coupling member in the manufacturing procedure of the coupling. At the applying, the slotted parts of the sleeve can spring inwards and after that spring back again when the sleeve obtains its working position according to Figures 5 and 6. The embodiments of Figures 5 and 6 allow also a comparatively simple and cheap production of the concerned coupling member. The assembling of a unit of concerned preassembled components can be carried out mainly from the rear of the coupling member. Material savings are attained as well, which contributes to a simple and cheap coupling member.

The invention is not restricted to the embodiments described above by way of example, but can also be subjected to modifications within the framework of the subsequent patent claims. Thus for example the whole or parts of valves 3a, 3b, 3c can be arranged so as to be capable of some movement in the axial direction relative to the first coupling member. Similarly the exits from the flow distribution housing 3c can be located further out in relation to the orifice on the first coupling member i.e. the outer wall 3c''' can be lengthened and the shank 3b can be shortened to the desired extent.

The object of the present invention facilitates couplings which are suitable for rational production methods in large and small workshops. The right-angled gap between the inner sleeve 4 and the supporting member 22 of the valve head is easy to manufacture with great accuracy which guarantees a good sealing function as described above. The axial surface which connects surfaces 22a and 22b guarantees that the inner sleeve always gets coaxially the right position in relation to the sealing surfaces on member 22 and seal 7.

CLAIMS

1. A coupling member including a valve body which is arranged to be fixed or movable and a sleeve capable of longitudinal displacement which in a sealing position is designed to seal against a valve body via a sealing element arranged on the latter, characterised in that the valve body is designed with a supporting device provided with an essentially radial surface for the sleeve, and that the latter is arranged so that in the said sealing position it rests against the said surface, that the valve body accommodates the sealing element so that the sleeve in the said sealing position extends past the sealing element and together with the valve body and its supporting device forms an essentially closed chamber for the sealing element, and that the chamber is connected via a gap which faces away from the supporting device with a medium pressure which is effective on the sealing element and by this means contributes towards effective mutual sealing of the valve body and sleeve by means of the sealing element.

2. A coupling member according to Claim 1,

wherein the sealing element is attached to the valve body by means of a flap capable of being rolled down which is arranged in the said valve body, characterised in that the roll-down flap is located on the opposite side of the sealing element in relation to the supporting device.

3. A coupling member according to Claim 2, characterised in that the rolled-down flap is arranged to control the said gap and that in the rolled-down state it extends over the sealing element, which thereby has O-ring shape so that in the radial direction this projects beyond the flap by 2/5 - 1/10, preferably by about 1/5 of its cross sectional area.

4. A coupling member in accordance with any one of the preceding Claims, characterised in that the sleeve is provided with a straight inner wall, the first end portions of which interact with the said supporting device and sealing element, and that the sleeve is subject to spring action at its other end portion by a compression spring which is effective against the sleeve end concerned.

5. A coupling member in accordance with any one of the preceding Claims, wherein the valve body consists of a valve head supporting a sealing element and a shank which is attached by its first end to this valve head and which extends coaxially inside the sleeve, characterised in that the sleeve extends upwards in connection with the other end of the shank which is fastened to a flow distribution housing which forms part of the valve body, the housing in turn being incorporated in the coupling component so that its orifices which lead out into the recess in the first coupling member where the sleeve is mounted are located at the second end portion of the sleeve.

6. A coupling member in accordance with any one of the preceding Claims, wherein a further sleeve, here designated as the second sleeve, is arranged radially outside the first-mentioned sleeve, in the following designated as the first sleeve, and which is displaceable relative to the coupling member and the first sleeve, characterised in that the supporting device has an axial straight end edge which is opposite a corresponding straight end edge on the second sleeve with an intervening gap of 0.1 - 0.5 mm in width, and that the supporting device has a thickness, e.g. 0.5 - 5 mm, which essentially corresponds to the thickness of that portion of the second sleeve which carries the said corresponding straight end edge, so that the lower end surface of the sleeve is located essentially at the same level as an inner surface present on the said portion of the second sleeve.

7. A coupling member in accordance with any one of the preceding Claims, characteristed in that the first sleeve has a straight outer wall which is reduced at its first end portion, that the axial end edge of the supporting device has roughly the same diameter as the reduction in the first sleeve, and that the latter reduction controls the maximum displacement of the second sleeve relative to the first sleeve.

8. A coupling member in accordance with Claim 6 or 7, characterised in that the outer surface of the valve body, also the outer surface of the supporting device, are straight in the radial direction and connect with a straight or somewhat sloping outer surface on the second sleeve.

9. A coupling member in accordance with Claim 8, wherein the said coupling member, in the following designated as the first coupling member, is capable of interaction in a quick coupling with a second coupling member, characterised in that in the case involving sloping outer surface on the second sleeve a ring-shaped and wedge-shaped chamber is formed between the first and second coupling members when these are engaged.

10. A coupling member in accordance with any one of the preceding Claims, characterised in that the end surface of the first sleeve, which rests against the radial surface in the sealing position, is essentially arranged at right angles in relation to the inner wall of the sleeve, and rests against the radial surface of the supporting device along its entire length, that the inner edge of the end surface is given a chamfer, and that the said chamber for sealing exceeds the volume of the sealing element.

11. A coupling member in accordance with any one of the preceding Claims, characterised in that the inner sleeve is provided with a discharging device which interacts with a corresponding discharging device in the first coupling member after that said sealing is carried out between the inner sleeve and the valve body.

12. A coupling member constructed, arranged and adapted for use substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

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Other: Online: WPI, EPODOC, PAJ

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2068069 A	(KJELL RONNY EKMAN) See valve body 3, figure 2.	1-8, 10-14 & 18-20
X	EP 0546745 A1	(AEROQUIP) See figures 2 and 3.	1-8 & 10-20
X	EP 0270302 A1	(UNILEVER) See figures 4 & 5.	1-4,8,13, 18,19 & 20.
X	US 3777771 A1	(DE VISSCHER) See figure 3.	1-8, 13 & 18-20

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
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